

a multivariate state estimation technique model, a neural network model, a mathematical model, an autoregressive moving average model, and a Kalman filter model.

Claim 38 – The method of claim 26 wherein the step of determining the operating mode of the asset includes a step of using at least one method from a group of methods comprised of a logic sequence method, a mathematical model method, a neural network method, and an expert system method for determining the operating mode of the asset.

Claim 39 – An asset surveillance system, said system comprising in combination:

a data acquisition means for acquiring a set of signals from an asset correlative to asset status;

a digitizing means for digitizing said set of signals for defining a set of digitized signals;

a process model comprised of a plurality of process submodels each correlative to at least one training data subset partitioned from an unpartitioned training data set and wherein each of said partitioned training data subsets and each of said plurality of process submodels <sup>has at</sup> ~~has~~ least one defined operating mode associated therewith;

an operating mode determination means for determining an operating mode of said asset;

a process model selection means for selecting at least one of said process submodels as a function of said determined operating mode;

a parameter estimation means for producing a set of estimated signal values from said selected process submodel;